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An interactive medication reminder to bond senior citizens and their family members

Bei Liu
bl8783@rit.edu

Rochester Institute of Technology

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bl8783@rit.edu

A Thesis Submitted in Partial Fulfillment of the

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of Fine Arts in Industrial Design

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College of Arts and Design

An interactive medication reminder

to bond senior citizens and their family members

by

Bei Liu

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Abstract

This project is about assisting seniors in their daily life. More and more senior citizens in the world are facing the problem of living alone. After research, I find that medication is a very important part of seniors' life. My design is about medication reminder that can also connect the seniors with their family members. At first, I focused on the social relationship of senior citizens and started to research medication reminders in the market. I also read many books and magazines about the medication of senior citizens and try to figure out the size and volume of my design. Then I made mockups to try to test the best way for seniors to control a reminder such as the behavior of remembering medications to take. After that, I made my prototypes and brought them to the nursing home. More refinements were made after these discussion in the nursing home. The final version of my design uses an interesting and noticeable way to remind senior citizens to take their medicine. Besides that, my product can connect to phone or a device of seniors' family members, which gives seniors better connection with their family members.

Keywords

Senior health, Medication management, Medication reminder, Medication for seniors

Introduction

More and more senior citizens in the world are facing the problem of living alone. People are social and need to communicate with other people. Loneliness is also damaging the health of senior citizens in some ways. Research shows that family companionship is very important for the elderly. It is worthy to notice that my product considers family companionship. I need to put this consideration to seniors' daily life. So, how to alleviate loneliness for senior citizens in their daily life? As we all know, medication is a very important part for senior citizens. There are so many who need to notice when they should take their medicine. Then I came up with a solution: reminding seniors to take medicine seems a very emotional way to connect with their family members. Products on the market looks medical to seniors and they cannot have better relationship with their family members. My idea is to design a product that is easy for seniors to control and gives seniors more fun having a good and daily connection with their family members.

Review of Literature

The design of caring for the seniors has always been an important issue for the development of society. With the aging population in many countries, there will be more and more elderly groups everywhere. Senior citizens play an important role in society: they form families and are responsible for keeping family members connected to each other. However, as the pace of social development is getting faster and faster, it is more and more common for seniors to live alone (either alone at home or with couples without children). These elderly people often suffer from serious loneliness problems due to the lack of attention from their families, which can have a significant impact on the seniors, families as a whole,

and even society. Loneliness among the elderly has become increasingly serious. According to the research of the University of California, San Francisco (USCF), more than 40% of the elderly feel lonely. This kind of loneliness and isolation may directly lead to the health problems of many elderly, which will have an impact on families and society.

However, through the research on the living habits of the elderly, I found that the elderly always have their own medication plan, and medication management is a very important part of their daily life. Many elderly people have family members who are responsible for helping them manage their medications: dispensing medications for the elderly, classifying medications for the elderly, and so on.I found that the action of reminding was actually very human, and family members' reminding was more effective for the elderly to take medicine. As for the research on drug reminder products on the market, I found that many products were weak or not in line with the reality in terms of interacting with family members: the interface was too small, the reminder method was difficult to understand, the drug setting was complex and other problems appeared in this research review of products.The use of these products can also cause confusion with the family and confusion with the elderly.

In my project, the most important problem to be solved is to solve the problem of drug management and medication reminder for the elderly in drug use. Because of the variety of drug intake, dosage and time of use, the seniors will have a lot of problems in medication management. In addition, the cognitive aging and memory decline of the elderly will make the elderly ineffective in drug management. Studies have shown that senior citizens' poor adherence to medications, sometimes forgetting to take them or increasing or decreasing the amount of medication they take, can have a significant impact on their health.

Process

In this project, I will design products that are more in line with the experience and habits of the elderly. The goal is to connect the elderly with their families by simplifying the complex activities of taking and administering medications and by introducing family reminders. We all know that as the elderly age, their cognitive ability will deteriorate, their movement will be slow, their vision will deteriorate, and so on, which will affect their use of products. I will conduct research on various products for drug management currently on the market, and design my product according to the living habits of the elderly and their needs. My goal is to give the elderly a healthier and happier life in their later years, so that they can have closer ties with their families.

Design research

With the development of society, the aging of population will be more and more serious. According to the survey of urban institute, the United States, for example, has more than 46 million people over the age of 65; And by 2050, that number is expected to grow to nearly 90 million. That means that by 2030, one in five Americans is expected to be 65 or older. As a designer who focuses on the psychological problems of the elderly, I believe that the greatest concern for the elderly is their mental health. According to a study by the university of California, San Francisco (UCSF), more than 40 percent of the elderly often feel lonely. Researchers at the university of California, San Francisco, found that this feeling of separation and isolation can lead to serious health problems and even death. A study by the department of psychology at

southwest university and the center for mental health education and research at southwest university, not only in the United States, found that loneliness among older Chinese increased year by year from 1995 to 2011. So loneliness among the elderly is not new, but why do we hear about it so often? It shows that this problem still needs our creative problem solving. In order to better design for the seniors, I have positioned my design to solve the loneliness of the seniors after a very early investigation .

In the course of my research, I found a very interesting study: the National Poll on Healthy Aging (NPHA) from the university of Michigan in the United States showed that elderly people with children were more likely to feel lonely than those without children. This coincides with research from the department of psychology at southwest China university. These studies show that older adults with children, spouses, and families are more likely to feel lonely than those without. This is easy to understand: loneliness is the difference between actual and ideal relationships. Feelings of loneliness and isolation arise when psychological expectations are not in line with reality. These studies are also a big reason why I should pay more attention to loneliness in older people with families.

There is no doubt that the relationship between the elderly and their families is very important.Research shows that older adults who see their children once a month or less are twice as likely to feel lonely as those who see their children every day (report from WRVS 2012). In fact, family ties can not only alleviate loneliness in the elderly, but also contribute to their physical health. Older people who are integrated into the family system are more likely to live healthier, longer lives than those who are isolated from their families. In the case of alzheimer's, which is known to be associated with cognitive decline, family connections can also be positive: a report from the United Health Group shows that even in older

people with advanced dementia, family contact can reduce symptoms and prevent faster mental decline.

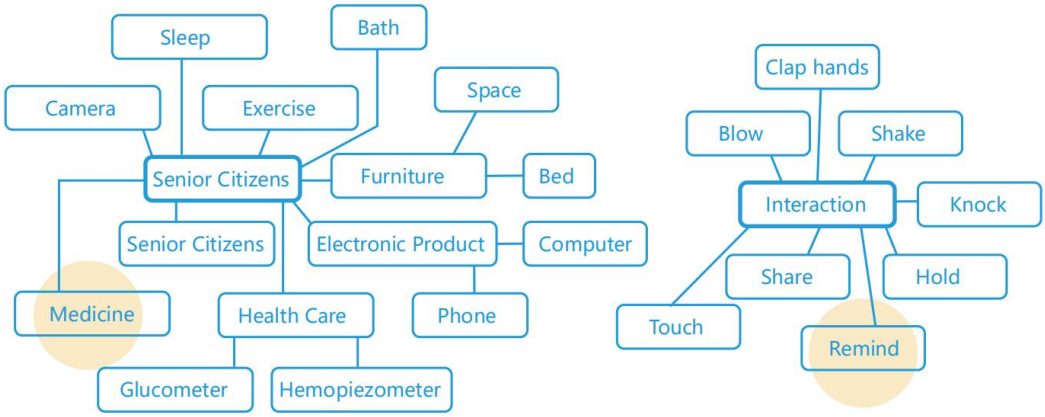
My project quickly moved from the broad question of loneliness in the elderly to how to strengthen the seniors' ties to family. I conducted interviews on the topic of loneliness and family connection among the elderly in order to quickly locate user needs. Relevant interview content and returns are shown in the following figure.

At the same time, I also carried out more targeted data research, including the analysis of the characteristics of the elderly user group，the investigation of the elderly living alone, the analysis of the seniors' social relationship, and the technologies and methodologies related to social contact.

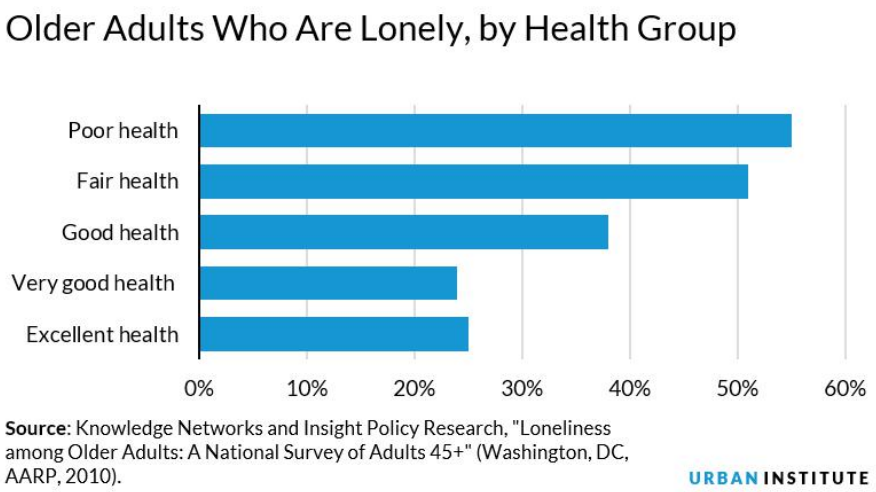
Based on interviews and in-depth research, we know that despite the popularity of social software and phones, the elderly are often unable to contact their families in most cases. The data from NCBI show that the nature of this family fragmentation is largely due to the geographical separation of the elderly and family members: 82% of children leave their elderly parents for work reasons. However, the essence of this social problem still comes from the distribution of social structure. The geographical separation of the

elderly from their families is a result of social development. And in the long run, it will continue for a long time. In the case of geographical isolation, it is particularly important to promote connections between the elderly and their families.

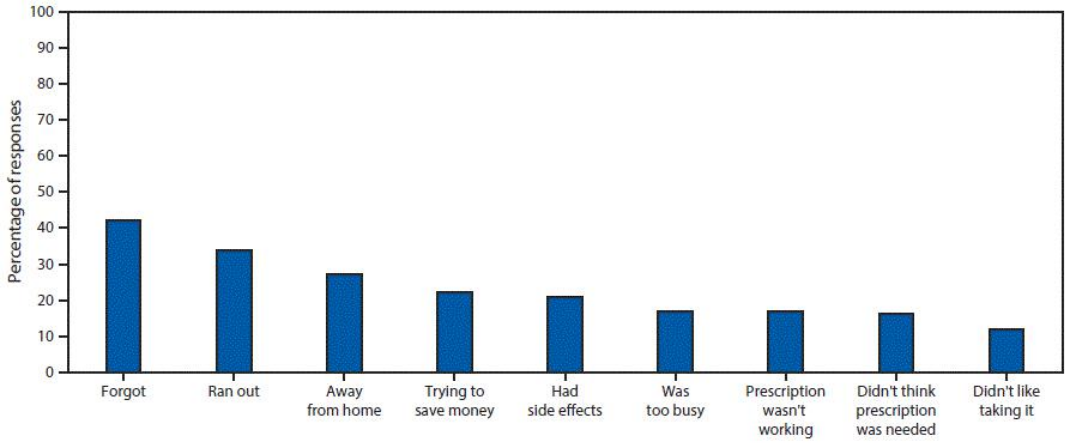
If I simply design an interactive product to contact with family, I think it is not in line with my design philosophy. In my opinion, life is more important than design, and I need to consider how to integrate design into users' life. Therefore, my design explores research on the living habits of the elderly. The following is my mind map which is aimed at the living habits of the elderly and the key words that can generate emotional touch. In order to better generate emotional touch with family, I have linked the key emotional touch of "reminder" to medication for the elderly. The following illustration shows my design thinking in relation to the users and potential products.



Combined with the results of my research (as shown in the figure below), poor physical condition often leads to a greater sense of loneliness. This finding is consistent with my original idea. And poor health also means more drug use, and from the findings, the goal of designing emotional medication management for the seniors has become clear.

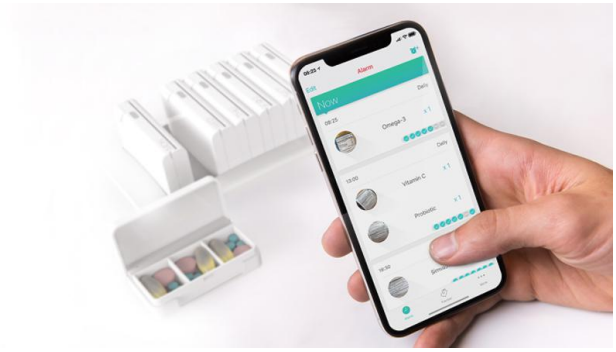


Through the research on drug treatment for the elderly, I found the design problems of drug management and drug compliance for the elderly. First, a couple of studies on medical conditions and health behaviors for seniors: 44% of man and 57% of women under 65 take five or more medications a week, and 12% of men and women who are older than 65 take 10 or more prescription and over-the-counter drugs, according to a Rite Aid study. According to the characteristics of the elderly user group, we can know from the investigation and interviews that the cognitive deterioration, uncoordinated hands and feet, memory bias and other problems will affect the elderly group's drug management. At the same time, drug compliance of the elderly is also a design problem worth considering. Studies from NCBI show that more than 50 percent of older adults have problems with low drug adherence. The chart below, from the CDC survey, shows several reasons why older adults have lower drug compliance. We can see from the picture, if you want to increase the senior medication adherence, medication process is necessary to remind.

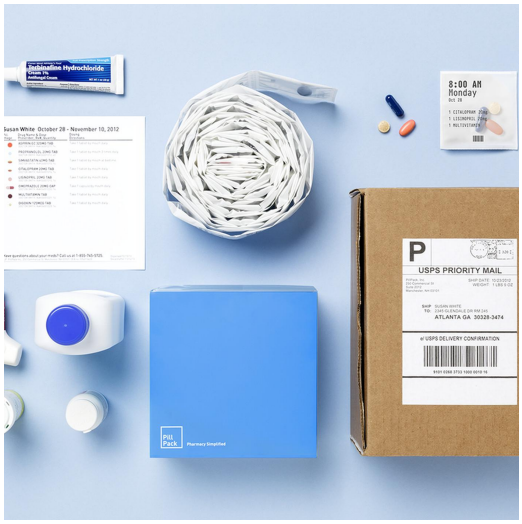


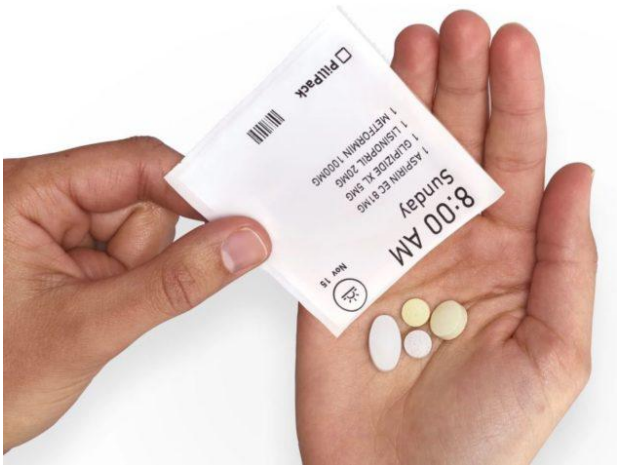
Research from the Center for Health Research, Ochsner Clinic Foundation, New Orleans, LA has shown that the intervention of family members has a very positive effect on medication adherence in the elderly. This study discusses the influence of external factors on medication adherence in the elderly. This supported my design concept, from the medication reminder this increase in parent-child interaction of the emotional action, to enhance the relationship between the elderly and family members.

I also explored a number of medication alerts on the market and some drug administration tools. By analyzing the advantages and disadvantages of products on the market, I established product advantages and risks. Two of them are worth mentioning because they open up new ideas for my design. The first is the Memo Box, a medication reminder product that won a red dot award (as shown in the figure below). This product is a drug reminder product with APP management, which adds the function of home monitoring. The feature is designed to allow family members to intervene when a user fails to take their medication on time. However, there are several deficiencies in this product, and each week's dispensing work is still unavoidable, which still places a burden on the elderly or caregivers.



The second product is a new Pharmacy service launched by Amazon Pharmacy in 2013 (shown below). The service had a big impact on my design. I see this as a service of the future: a service that provides users with medication management and dispensing services. The pharmacist selects the medication directly for the patient and distributes the daily dose into the bag. This greatly reduces the burden of dispensing medicine for the elderly, caregivers or family members, and also provides great help for drug management for the elderly. However, there are drawbacks to the service: first, the user base of the service is not the elderly, because it is more dependent on the phone, and the medication alert function it provides is based on the interaction on the phone. This interface is not friendly to the elderly users, because the elderly have weak vision and inflexible hands and other reasons will cause adverse effects on the service. Second, the service lacks family interaction and, at the family level, does not promote medication compliance among the elderly. Finally, many of the service's usage details don't really take into account the older user base. For example, too small a prompt font may cause reading difficulties for the elderly, and an opaque box may not allow elderly users or family members to directly see the medication.





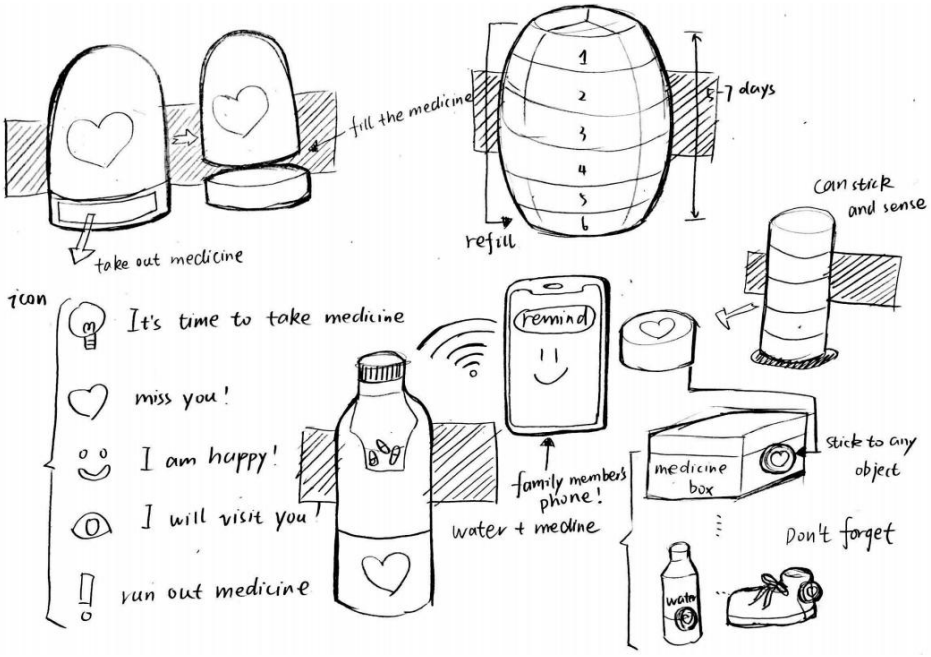
To sum up, the factors to consider in designing a more sensitive drug reminder product for the elderly are very complicated. Designing for a specific group of people, sometimes designers complicate the design, which means more factors need to be considered. Of course, sometimes the design needs to be simplified so the product can communicate with the user in a more direct way.

Design development

In order to better enable the elderly to interact with their families, or to design an interaction design more in line with the elderly, I used adhesive tape to wrap my hands to simulate the inflexible use of the hands of the elderly (as shown below). I also removed myopic glasses to mimic the deterioration of older people's eyesight. These imitations can help me better experience and analyze the psychology of users. First, through the simulation activities, I got some points to pay attention to in the design. First, since my hand was caught in the tape during the simulation, the size of a button should be suitable for the use of the elderly. I tested it in five ways: rotate, press, take, hold and open. Second, due to the deterioration of vision in the elderly, many visual considerations need to be addressed. For example, if a number appears on the

screen, the font size must be large. Some drug reminders require the elderly to set their own alarm clocks, yet these fonts or buttons are not as friendly to the elderly. Thirdly, I need to design a more convenient way to distribute medicine for the elderly. Because according to the research, many elderly people have their families to help distribute the medicine, which is undoubtedly complex work. The weekly drug distribution work often requires the helper to spend a lot of time and energy.

In the simulation activity, I also analyzed the specific process of drug reminder. Through a lot of testing and analysis, I divided the drug distribution work into two groups: the first group was the design of the drug to be distributed by the caregivers or the elderly themselves; The other group USES the latest drug service system, where pharmacies and pharmacists distribute drugs to patients and deliver them. From the design direction of the first group, I generated the following ideas and made some concepts into a simple model (the model was made to test the actual size and usage as shown below).



The sketches shown in the drawing above show the products that are associated with drug alerts and medications: dispensers, water bottles, cell phone interactions, stickers, etc. My goal is to make the elderly feel closer to life when using my products without the use of trouble. In combination with my hand simulation test, I used the simple action of pressing to complete the drug collection of the elderly. This is the medication reminder using pressure below.

This is a conceptual interactive medication reminder design. As shown in the picture, the drug reminder is composed of an upper box and an interactive machine on the lower part. When the elderly are

supposed to take their medicine, the lower interactive machine tilts the upper box to remind them in an appealing way. The elderly, on the other hand, only need to press the tilted cartridge to balance, and the medicine will fall into the hands of the elderly. Yet the design has its flaws. It holds too little medicine. The machine still requires heavy dispensing. So, I started thinking about increasing the storage capacity of the medicine box to meet the design. But the sheer size of the device has lost its aesthetic appeal. So I switched to a different kind of design.


The pressing box shown above has more medicine reserves. However, through the user test, this huge machine will make the user feel more confused and maybe be difficult to use, so I continued to consider simple modeling design to fit the actual situation.

It is worth mentioning that through the modeling and test analysis of the above design concepts, I found that the limitation of these designs is that they all introduce the action of the caregivers or the elderly to distribute the drugs. It's inevitable at this point of time. We do know, however, that as we age, the onset of many chronic diseases increases the number of medications available to the elderly. Through the investigation we can know that 44% of man and 57% of women over 65 take five or more medications a

week. And 12% of men and women who are older than 65 take 10 or more prescription and over-the-counter drugs according to a Rite Aid study. My query now concerns an easier way for the elderly to dispense with medication management.

If a medicine box can dispense medicine automatically, can it reduce a lot of dispensing medicine work and let to a new concept. Through research, I found that there are automatic dispensers on the market. This dispenser requires the user to pour different drugs into different compartments of the dispenser, thus reducing the user's dispensing time by inputting the time of each drug. Therefore, by understanding the implementation of this technology, I made the corresponding dispensation box model (as shown below).

Dispensing boxes, shown above, minimize dispensing time for caregivers and the elderly. Users simply place different types of medication in different compartments of the boxes. Caregivers can control medication management for the elderly simply by setting the time and amount of medication for the seniors.

However, I finally decided to bring another set of simpler methods into my design. As I mentioned in the design research section, there is currently a medical service on the market: this service provides users

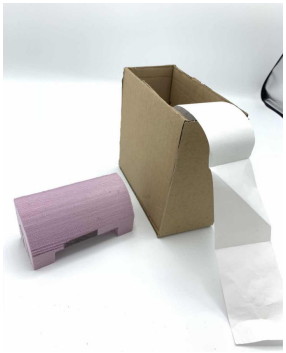
with the service of drug management and drug distribution. The pharmacist selects the medication directly for the patient and distributes the daily dose into the bag. In fact, this greatly reduces the burden of dispensing for the elderly or caregivers, and also provides great help for the elderly in drug management. If my medication alert design can be based on this service, then my medication alert will be more futuristic and more systematic in providing services to users. Pharmacies and pharmacists put the medications a patient should take each time into a medication bag, three to five small bags a day. Users only need to take the medicine bag once, which is very convenient. I made a model of the corresponding medicine bag (as shown below).



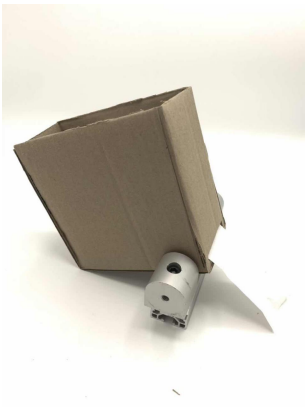
Making the model of the medicine bag can help me better estimate the size. In order for my product to function as a reminder, I began to think about adding simple and useful reminders to my design, so I focused on the design of medication reminder boxes.

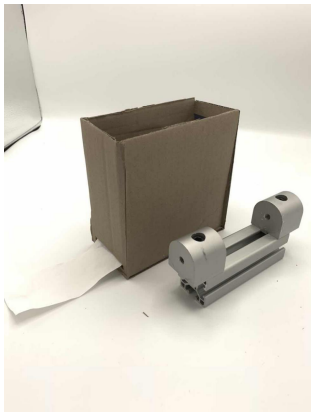
The above model is the medicine box reminder concept. The medicine box contains a medicine bag rolled up inside and the machine dispenses the medicine automatically. When it is time to take medicine, the medicine bag will come out from the opening of the medicine box to remind the user that he should take the medicine (accompanied by an audio reminder). The bevel is designed to make the bag come out more in line with the user's usage. But the design is still not simple enough, because the user still needs to put the bag into the machine. This is not an easy way to load the medication box. In my tests, I found that if there was a way for users to reduce their use of the machine even more, without having to load the bag into the machine. This not only simplifies the steps, but also makes the using process more interesting. Because the hands of older users are not flexible, it is very difficult to operate the medicine bag. If the bag slips out of their hands, it will only increase their weakness and frustration. So, I made the following concept reminder box.



The foam part is my medication reminder part. I only need to load this part into the medicine box that I send once a month, so as to realize the reminder function. The display on the medication reminder can also make it easier for the elderly to communicate with their families. During the discussion period, however, the person being tested came up with a proposal to put the medication box on top of the machine. This is very useful, because it's very similar to what I mentioned earlier with the push medication alert box, which allows the user to interact better with the machine. So I revised my model.

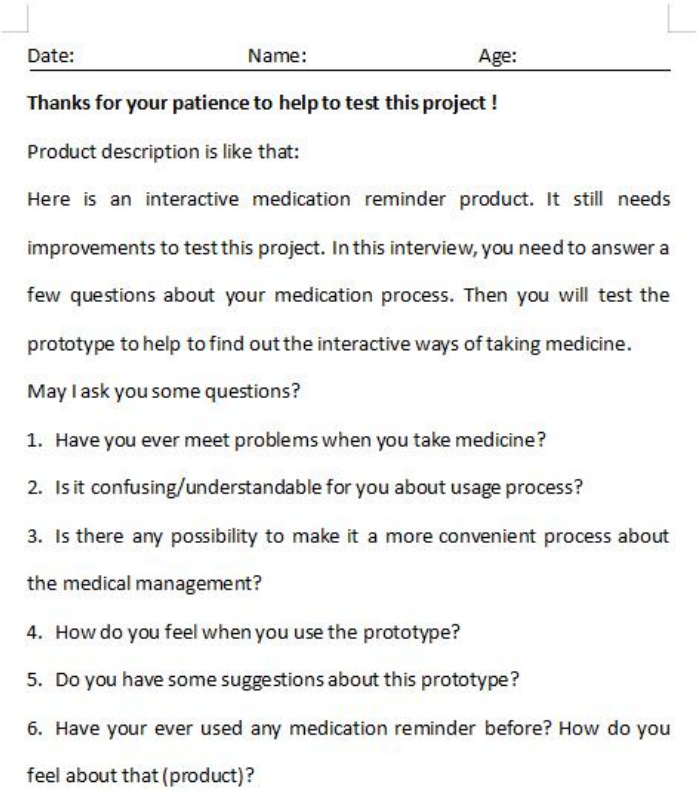




The process of using the above model is as follows: when it is time to take medicine, the medicine reminder will issue a prompt (voice prompt), and the user can complete the action of taking medicine by pressing on the top of the medicine box. Drug reminder box with reminders of family members, can make the elderly intuitive to see their loved ones to their care. All of this is done by interacting with the machine, rather than using the phone. This can greatly reduce the confusion and lack of fluency caused by the use of mobile phones by the elderly. It is also easier and more intuitive for older people with inflexible hands and feet or impaired vision. At the same time, I also carried out user tests and experiments on the installation method of the medicine box. I found that if the medicine box can be directly installed, it can be a very easy way for the elderly to get their medication. I also explored reducing operations.

For the model test, I made a questionnaire so that I could conduct user interviews and improve the way the product is used. I ask and continuously improve my products in terms of user usage, user psychology research, product use experience, product interaction, and contact with family.

The questionnaire is shown in the figure below.



Date: Name: Age:

Thanks for your patience to help to test this project !

Product description is like that:

Here is an interactive medication reminder product. It still needs improvements to test this project. In this interview, you need to answer a few questions about your medication process. Then you will test the prototype to help to find out the interactive ways of taking medicine.

May I ask you some questions?

1. Have you ever meet problems when you take medicine?
2. Is it confusing/understandable for you about usage process?
3. Is there any possibility to make it a more convenient process about the medical management?
4. How do you feel when you use the prototype?
5. Do you have some suggestions about this prototype?
6. Have your ever used any medication reminder before? How do you feel about that (product)?

By distributing the questionnaire to the users in the test, I can get the direction of improvement from the users. The test found that older adults were more interested in simple interactions with their families, and having their family remind them to take their medication was effective in improving their medication adherence and increasing their expectations of life. At the same time, I also got a lot of design details: for example, if the elderly have children at home, the safety of the machine should be considered; Too small a font on a medicine bag can also be frustrating for older people; The simpler the interface to contact family,

the better.

To sum up, the design development process helped me to continuously improve the product process. I not only made models and tested users, but also conducted further research on the design concepts. I test, improve, and research, and repeat the steps. All these ways and means have made a great contribution to my ability to design better products.

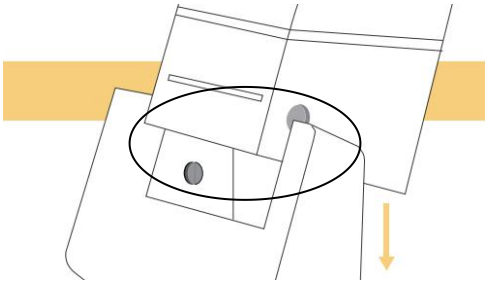
Final Design

To sum up the design development and use test mentioned above, my final design concept is shown in the following figure(figure 1).

(Figure 1)

This is an interactive drug reminder. Its name is Caremore. This means it is more sensitive to the needs of older people. It consists of a medicine box and a reminder. The inside of the medicine box section is the medicine bag delivered by the pharmacy and pharmacist to the health condition of the elderly. The entire package is delivered by Courier system to the senior's home. The user only needs to put the medicine box into the medicine reminder to complete the entire loading process. The buckles(figure 2) on

both sides of the medicine box are connected to the machine, which will help to push out the medicine. The transparent design of the medicine box is for the user or the user's family to have a more visual view of the use of the medicine bags, and helps with the drug purchase and management. The drug reminder is charged by USB and accompanied by light and sound cues. There are two light prompt buttons in the operation interface(figure 3). One is the alarm button and the other is the family communication button. The alarm button lights up and the light flashes to indicate that it's time to take the medicine. The family communication button lights up, indicating that the family is reminding them to take medicine or sending greetings. The operation interface of my product is simple and concise, which is more in line with the usage habits of the elderly.



(figure 2)

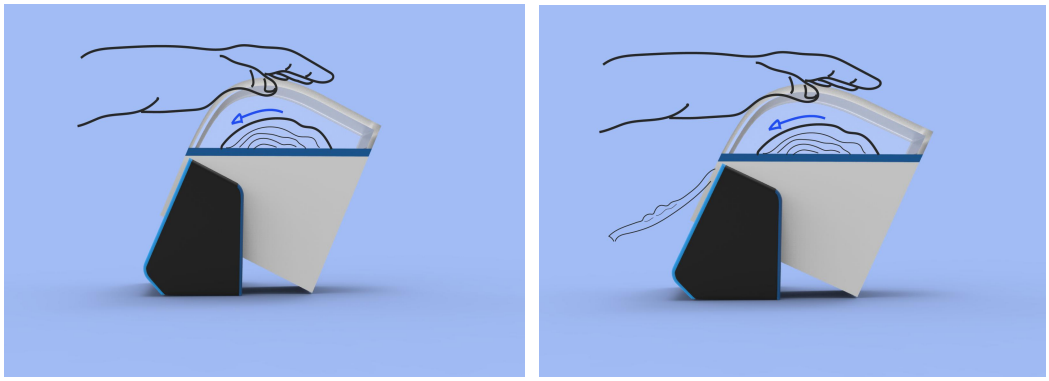
(Figure 3)

The specific operation process is that when the elderly book this service, there will be a pharmacist or doctor to evaluate and examine the body of the elderly, and according to the physical conditions of the elderly drug list. At this point, the list is sent directly over the network to the pharmacy and the pills that the elderly need to take are made into one bag at a time. Finally, the medicine box was sent to the senior's home by mail. When the seniors get the medicine box, they need to take the transport package apart, so they got the medicine box. At this point, the medicine box contains a month's worth of medication for the elderly. The seniors connected the box directly to the medication reminder through the buckle structure, which completed the loading process. It's very simple and easy to operate, very friendly to older people. Users can scan the code to access Caremore's medication management APP. This APP contains the user's medication usage and medication list, and can add family members to the management group, so as to manage and supervise the medication of the elderly.

Now all you need to do is turn on the machine and turn on the drug alert function. When it is time to use the drug, the machine lights will flash and a beep will sound. To take the medicine, the senior gently presses on the top of the box, and the bag discharges from the slot(figure 4). When the machine detects that the drug has ejected, the alarm clock stops. If you can't take the medicine immediately, press the flashing alarm button and the alarm will be delayed for five minutes until the pill bag is out.

The family communication button lights up when the family wants to get in touch with the elderly. At this point, the family can use the APP to express their feelings with the elderly: if the alarm clock with the drug reminder goes off, which means family members remind the elderly to take the medicine. At this point, the elderly can communicate that they have received a reminder by pressing the light of the family

communication button. If the family communication button lights up separately, the family is sending greetings and wants to interact with the elderly. Now the elderly can press the button to express that they have received a greeting from their family. If you still want to communicate, you can do so on the Caremore APP. The whole operation process is very clear and simple.



(Figure 4)

Because the shell is transparent, the elderly and their families can quickly find out how the bag is being used, and if the delivery service misses something, they can spot the problem in advance. Because the information on the bag is too small, it can make reading difficult for older people who already have poor eyesight. So I marked the medicine bag of each day with the same color, so as to give the elderly an intuitive experience: how much medicine I took today, how many bags of medicine I have left.

When a month's supply of medicine is almost finished (before the express service time), the APP will send the message to pharmacists and pharmacies, and carry out a new month's drug delivery for the elderly. The seniors just need to unload the boxes and replace them with new ones that come in the mail. The old medicine box is recycled and ready to be filled into new medicine bags the next time. This system concept and product based on future services.

Summary of Project

The aging of modern society is serious, more and more senior citizens need to get the attention of their family and society. With the rapid development of science and technology, people are getting closer and closer to each other, but these designs do not seem to be so friendly to the elderly group: complex user interface, smaller and smaller words, and more ways of using make the elderly group feel more confused about "communication". This makes the loneliness of the elderly even worse. The sense of companionship is a very important design point, how to make the elderly feel the company of their relatives. In the research on the living habits of the elderly, I found that the medication is an important part of the daily life of the elderly. In my design concept, combining the daily life of the elderly with my products can better promote the realization of product functions. Starting from the study of the living habits of the elderly, my design products can also be more practical.

The interactive medication reminder I designed combines medication management services for the elderly and the function of reminding relatives, enabling the elderly to better connect with relatives. It's worth noting that medication alerts are a reason to keep in touch with family. For the elderly, this avoids the trouble of finding no reason to communicate with family members. Some older people don't call their families when they are working or studying because they are afraid of disturbing them. Text-messaging services are also less friendly to the elderly: poor user interface and complex operations are a problem for the elderly. These so-called ways of communication keep the elderly away from their families all the time. Should we contact our families in a softer way? This is also a question well worth discussing.

In fact, my design also has the expectation that the society can consider the elderly more. Our society is inseparable from the elderly community, we often heard a phrase: every senior is a walking library. They not only supported the whole society at the family level, but also had a great influence on the whole world history. The focus of design for the elderly is that we are not only for them, but also for us in the future.

I designed this interactive drug reminder to maximize the connection between the elderly and their families. Reminding the elderly to take their medicine is a very human and practical way to communicate. Imagine how happy grandma (mom) felt when she received a greeting from her family one morning when she needed medicine. Because of the introduction of service design, I can optimize the drug management of the elderly in my system. How to make the elderly take medicine correctly and improve their experience when taking medicine is a design point that I pay great attention to.

From the delivery of the medicine, the service began. One month at a time can reduce the complexity of drug administration and reduce the burden on families of dispensing drugs to the elderly. A simple medication box is connected to my medication reminder device for medication reminders and medication administration for the elderly. They also receive messages from family members and medical supervision. For the elderly, this series of procedures can provide them with a more active and healthy life. Keep in mind that many older people control the amount of medication they take and lack direct contact with their pharmacist. These situations are very dangerous to their health. To increase the compliance of the elderly with medication, my product includes family reminders. Making family members a part of the design of the whole system also plays an important role in the drug management of the elderly.

My medication reminder uses the latest medication management system to provide more effective

medication reminders for the elderly in the simplest and most direct way. Simple, easy-to-use processes are more elderly-friendly. To know that many elderly people are tired of drug management, the weekly drug distribution is not so easy, the variety of drugs, the diversity of time to take medicine, has a great impact on the elderly drug distribution work. My product, however, grew out of a futuristic drug management system in which the elderly could communicate directly with the pharmacist. My drug reminder also has a deeper meaning: it is not only a drug reminder, but also a design for future development.

In the beginning of the paper, I also mentioned that with the development of technology, many designs have neglected the elderly. Creating a carefree life for the elderly is what we all want to see and what the society needs to think about. In the short term, what we can do is help our families, but in the long term, we are also creating benefits for our future selves. Everyone gets old and needs help from others. Just imagine, if one day, the elderly people do not think that taking medicine is a nuisance, then our society can bring the elderly more help and care.

Conclusion

With the progress of science and technology in modern society, the problem of human health care has gradually become an important part of a family. Due to the limitations of the elderly population (such as immobility, memory loss, etc.), there are many problems with medication. Therefore, medication for the elderly needs more attention from the society. Drug use accounts for a large proportion in the elderly population, and many products are designed for the elderly. However, through my research, I found that many products do not fully conform to the usage habits of the elderly. At the same time, one of the

purposes of my product is to solve the loneliness of the elderly. In today's society, more than 40 percent of the elderly feel lonely. The data show that the happiness of the elderly is largely due to the support and encouragement from their families. The relationship between the elderly and their adult children has also become an important social issue. My product is designed to increase the connection between the elderly and their families. The truth is, however, that family members can do more than most drug reminders on the market. My product uses the latest drug service system, introduces the function of drug reminder, and also connects with family members. All these advantages can make my product stand out from other similar products. Easy and simple interaction can also greatly reduce the resistance of the elderly to the use of the product.

Because my product is built on a service design, I need to make my product more in line with service design. Drug alerts and use need to be based on the communication between the hospital and the patient, so if my product can be mass produced, it will surely lead to the emergence of the related body testing industry. For example, I would design a product with a detection function combined with my medication alert. By means of testing products to detect the patient's pathological conditions, and then timely feedback to the hospital or physician, through testing, treatment, medication management to form a closed loop. This concept can bring the whole service to the elderly.

I believe that in the future, we will have many reasons to care about and for the elderly community, because this is not only a moral thing, but also a prerequisite for the continuation of the development of the world. We need to pay enough attention to this group, and I believe my project has made a contribution to designs for the elderly in the future.

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Center for Health Research, Ochsner Clinic Foundation, New Orleans, LA